

We Claim,

- (1) A process for the preparation of bio-release molybdenum fertilizers which comprises heating molybdenum trioxide, one or more basic compound(s) of metal(s) selected from magnesium, calcium and sodium, and phosphoric acid till a solid polyphosphate is obtained and finally obtaining the dried powder.
- (2) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 1, wherein molybdenum trioxide (MoO_3) and a basic compound such as oxides or carbonates of magnesium, calcium and/or sodium, are heated with phosphoric acid..
- (3) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 1 or 2, wherein polymerisation is allowed to occur by removal of H_2O between adjacent P- OH groups of phosphates with the formation of P-O-P bonds by heating
- (4) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 3, wherein, the polymerisation is allowed to continue till almost complete, whereupon a dry, friable powdery material is formed.

- (5) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 4 wherein the dry material obtained is ground to a free flowing, non-hygroscopic product
- (6) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 to 5 wherein reducing impurities in any of the raw materials which may interfere with the process is removed by the addition of an oxidant such as MnO₂ (pyrolusite).
- (7) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 1 wherein the product obtained is, a magnesium sodium polymolybdophosphate.
- (8) A process for the preparation of bio-release molybdenum fertilizers as claimed in the preceding claims wherein the starting materials include molybdenum trioxide (containing up to 66.6 % Mo), magnesia (containing up to 60 % Mg), sodium carbonate (containing up to 43.4 % Na) and phosphoric acid (containing up to 60 % P₂O₅).

- (9) A process as claimed in claim 9 wherein the weight ratio of Mo : Na : Mg : P used is, 1 : 0.96 : 2.53 : 6.46; the corresponding molar ratio is 1 : 4 : 10 : 20.
- (10) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 and 8 wherein molar ratio of Mo : P may be varied between 1 : 5 and 1 : 30 without seriously affecting product properties and is preferably in the molar ratio of 1 : 20 so as to produce a fertilizer with low Mo levels..
- (11) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 and 8 wherein the amount of Na is optimally at a molar ratio of 4 with respect to Mo.
- (12) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 and 8 wherein the amount of Mg is in the ratio Mg : P = 1 : 2 which is sufficient to form the dihydrogen phosphate.
- (13) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 to 7 and 10 wherein the starting materials include

molybdenum trioxide (containing up to 66.6 % Mo), sodium carbonate (containing up to 43.4 % Na) and phosphoric acid (containing up to 60 % P₂O₅).

(14) A process as claimed in claims 1 and 13 wherein the molar ratio of Mo : Na : P optimally used is, 1 : 24 : 20.

(15) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 to 7 and 10 wherein the starting materials include molybdenum trioxide (containing up to 66.6 % Mo), magnesia (containing up to 60 % Mg), and phosphoric acid (containing up to 60 % P₂O₅).

(16) A process as claimed in claims 1 and 15 wherein the molar ratio of Mo : Mg : P optimally used is, 1 : 12 : 20.

(17) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 to 16 wherein all reactants are mixed together, and heated at a temperature range of 200-350°C till dry.

(i8) A process for the preparation of bio-release molybdenum fertilizers as claimed in claim 17 wherein the optimum temperature is 300⁰C.

(19) A process for the preparation of bio-release molybdenum fertilizers as claimed in claims 1 to 16 and 18 wherein molybdenum trioxide is first heated in a solution of the base, which is selected from oxides and carbonates of sodium, calcium and magnesium and then further heated with phosphoric acid till dry.

(20) A process for the preparation of bio-release molybdenum fertilizers substantially as herein described with reference to the examples.